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Numerical investigation of the evolution of a shock wave in a gas suspension with consideration for the nonuniform distribution of the particles

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Abstract

© 2015, Pleiades Publishing, Ltd. In this paper we present the results of investigating the process of evolution of a shock wave in a gas suspension whose dynamics are simulated by the continuous system of motion equations of a two-temperature and two-speed monodispersive medium in the two-dimensional case. The carrier medium is described by the system of Navier–Stokes equations. The dispersive phase is simulated by the mass, momentum, and internal-energy conservation equations. The system is brought into the dimensionless form and is solved by the explicit McCormack method with the conservative correction scheme applied to each phase in order to obtain a monotonic solution. The obtained solutions are compared with the results known from the literature.

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Keywords

decay of discontinuity, explicit McCormack scheme, gas suspension, Navier–Stokes equations